

Serial No. 10/060,737

PATENT
Docket No. 58027-011100CLAIM AMENDMENTS

Claim 1 (currently amended): A micro-machined chemical-mixing device comprising:
walls of the device forming a chamber having an outlet;
an evaporator adjacent the chamber for evaporating a liquid non-pressurized fluid and
introducing the evaporated liquid fluid into the chamber;
a liquid-feed path for supplying the liquid to the evaporator; and
an initiator for ~~providing initial or sustained energy to react the evaporated liquid thereby~~
causing energy transfer through the outlet igniting the evaporated fluid in the chamber.

Claim 2 (currently amended): The device of Claim 1, further comprising an first inlet for
introducing an non-pressurized oxidizer into the chamber for forming a mixture of the
evaporated liquid fluid and the oxidizer;

and wherein the initiator provides energy to combust the mixture of the evaporated liquid fluid and the oxidizer, thereby sending a pressure wave through ~~the~~ an outlet.

Claim 3 (currently amended): The device of Claim 2, wherein the oxidizer is in a gas phase
~~introduced to the chamber through an inlet passing through the walls of the device.~~

Claim 4 (currently amended): The device of Claim 3, wherein the ~~oxidizer gas~~ is air supplied from outside the device ambient air.

Claim 5 (currently amended): The device of Claim 2~~1~~, wherein the oxidizer is evaporated into
the chamber by the evaporator and mixed with the evaporated liquid fluid to form reactants
~~by evaporating liquid oxidizer supplied to the evaporator by the liquid feed path.~~

Claim 6 (cancelled)

Claim 7 (currently amended): The device of Claim 1, wherein the evaporator has a
membranous pad containing a plurality of holes and grooves to increase surface adhesion and
flow of the liquid fluid.

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Claim 8 (currently amended): The device of Claim 1, wherein the feed path includes at least one channel for delivering the fluid to the evaporator, said feed path being designed to aid evaporation further comprising a plurality of laminae and having at least one inlet port and at least one outlet port, wherein a chemical entering the inlet port flows through a plurality of channels which increase surface adhesion of the chemical to the laminae.

Claim 9 (cancelled)

Claim 10 (currently amended): The device of Claim 1, wherein the evaporator, the chamber and the initiator are formed from at least one of silicon, plastic, ceramic, and glass based material, the material being selected based upon operating temperature of this film based quality material, such material being selected according to the operating temperature, and such material being selected from the group comprising silicon based, ceramics and glass materials.

Claim 11 (currently amended): The device of Claim 1 wherein the evaporator is located substantially adjacent to and gaseously connected to the chamber to convert a liquid phase chemicals from a liquid phase into a gaseous phase chemical for introduction into the chamber.

Claim 12 (currently amended): The ~~micro~~-device of Claim 2, wherein at least two different liquids-fluids are supplied to the evaporator by at least two separate inlets for mixing with the oxidizer.

Claim 13 (cancelled)

Claim 14 (currently amended): The ~~micro~~-device of Claim 12, wherein the oxidizer is a gas supplied from outside the device and introduced to the chamber through an inlet passing through the walls of the chamber for mixing with at least two different evaporated liquids-fluids within the chamber.

Claim 15 (currently amended): The micro device of Claim 1, wherein the initiator comprises at least one of a spark or glow wires to provide combustion on an array of platinum or other high temperature performance materials.

Claim 16 (cancelled)

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Claim 17 (currently amended): The ~~micro~~-device of Claim ~~12~~, further including at least one temperature sensors for efficient mixing between the oxidizer and the fluid, said at least one temperature sensor being part of the chamber feedback temperature control.

Claim 18 (currently amended): The ~~micro~~-device of Claim ~~17~~, further including at least one pressure sensors for efficient mixing between the oxidizer and the fluid feedback pressure control.

Claim 19 (currently amended): The ~~micro~~-device of Claim 1 wherein the ~~micro~~-device contains no valves, chemical pumps, pressurized chemical lines or pumps for operation of said device.

Claim 21 (new): The device of Claim 11 wherein the evaporator includes a pad comprising of holes and grooves to increase surface adhesion of the chemical to the pad.

Claim 22 (new): The device of Claim 21 wherein the evaporator delivers the chemical in a non-pressurized state to the chamber.

Claim 23 (new): The device of Claim 2 wherein the combustion of the evaporated fluid generates an acoustic wave, said acoustic wave is used to draw the oxidizer from the first inlet into the chamber.

Claim 24 (new): The device of Claim 23 wherein subsequent combustion is provided by a wavefront of the acoustic wave, after the device achieves operational temperature and operational acoustic frequency.

Claim 25 (new): The device of Claim 24 wherein the combustion has a pulsating wave characteristics such that it allows combustion control using methods of constructive addition and destructive cancellation of the acoustic wave.

Claim 26 (new): The device of Claim 1 wherein the device contains no moving mechanical parts.